



A new record for *Melanophryniscus moreirae* (Miranda-Ribeiro, 1920) (Amphibia, Anura, Bufonidae) in the state of Minas Gerais, Brazil

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Abstract. *Melanophryniscus moreirae* is recorded from a fifth locality. A specimen was collected in Serra do Papagaio, municipality of Alagoa, Minas Gerais, Brazil, 18 km southeast from the nearest previous record in Aiuruoca. This new record fills a gap of about 32 km in the distribution of the species, between Itamonte and Aiuruoca.

Key words. Alagoa; Serra do Papagaio; geographic distribution.

The genus *Melanophryniscus* Gallardo, 1961 encompasses 29 species of small anurans that are distributed in Argentina, Uruguay, Paraguay, Bolivia and Brazil (KWET et al. 2005, VAN SLUYS & GUIDO-CASTRO 2011, FROST 2016). *Melanophryniscus* species occupy different habitats, from open fields and salt marshes to forests and from sea level to altitudes of about 2,500 m (KWET et al. 2005, PELOSO et al. 2012, BORNSCHEIN et al. 2015). Based on external morphology, three groups of species (*moreirae*, *tumifrons* and *stelzneri*) are traditionally recognized in this genus (but see KWET et al. (2005) regarding *M. rubiventris*).

Melanophryniscus moreirae (Miranda-Ribeiro, 1920) inhabits open, high-altitude areas of the Itatiaia National Park, between the states of Minas Gerais and Rio de Janeiro (BOKERMANN 1967, GUIX et al. 1998, CARVAJALINO-FERNÁNDEZ et al. 2013) as well as high areas in the municipalities of Aiuruoca, Minas Gerais (WEBER et al. 2007), and Queluz and Campos do Jordão, São Paulo state (Figure 1) (MARQUES 2006, ZANK et al. 2014).

Its activity is diurnal (HADDAD et al. 2013, VAN SLUYS & GUIDO-CASTRO 2011) and strongly seasonal, with periods of activity between September and April. The mating season occurs between September and December, with a peak in October (VAN SLUYS & GUIDO-CASTRO 2011). During the cold and dry season, individuals enter into a state of dormancy inside a 5–15 cm deep hibernaculum in the soil (CARVAJALINO-FERNÁNDEZ et al. 2013).

SILVANO et al. (2004), who classified the conservation status of *M. moreirae* as Near Threatened according to the criteria of the International Union for Conservation of Nature, believed more research is necessary to confirm that this is a species having a restricted range and better determine its extent of occurrence. Herein, we present a new record for *M. moreirae*, the fifth known occurrence for the species.

On 17 November 2015, during a collecting expedition at Serra do Papagaio National Park (22°11'53.47" S, 044°46'00.35" W; datum WGS84, 2,220 m above sea level) in Alagoa, Minas Gerais, an individual of *M. moreirae* (Figure. 2) was observed at 16:00 h, at rest, in a small stream. The temperature was 20.6 °C and humidity 85%. The specimen was collected (collection permit SISBIO 47749-2), euthanized with anesthetic overdose (Lydocain 2%) and deposited in the herpetological collection of the Instituto Butantan 'Alphonse Richard Hoge', São Paulo, Brazil (IBSPCR), and identified with the voucher number of IBSPCR 1919.

The collected specimen was identified based on morphological comparative analysis using material from scientific collections and literature data. According to CRUZ & CARAMASCHI (2003: 8), the *M. moreirae* group was defined as species having "very developed warts with an apical corneous spine on dorsal surfaces and flanks, absence of conspicuous color pattern of contrasting spots or blotches on dorsum, and absence of a protuberance on the snout". The *moreirae* group is composed of three species (*M. moreirae*, *M. sanmartini* and *M. langonei*); *M. moreirae* is the only species occurring outside Uruguayan savanna ecoregion (*sensu* OLSON et al. 2001) and at altitudes above 2000 meters (MANEYRO et al. 2008) and can be diagnosed of the others by the disposition of dorsal warts and general pattern of coloration (MIRANDA-RIBEIRO 1920, COCHRAN 1955, MANEYRO et al. 2008). The habitat where the specimen was observed also corresponds to what is known for *M. moreirae* (MIRANDA-RIBEIRO 1920, MARQUES et

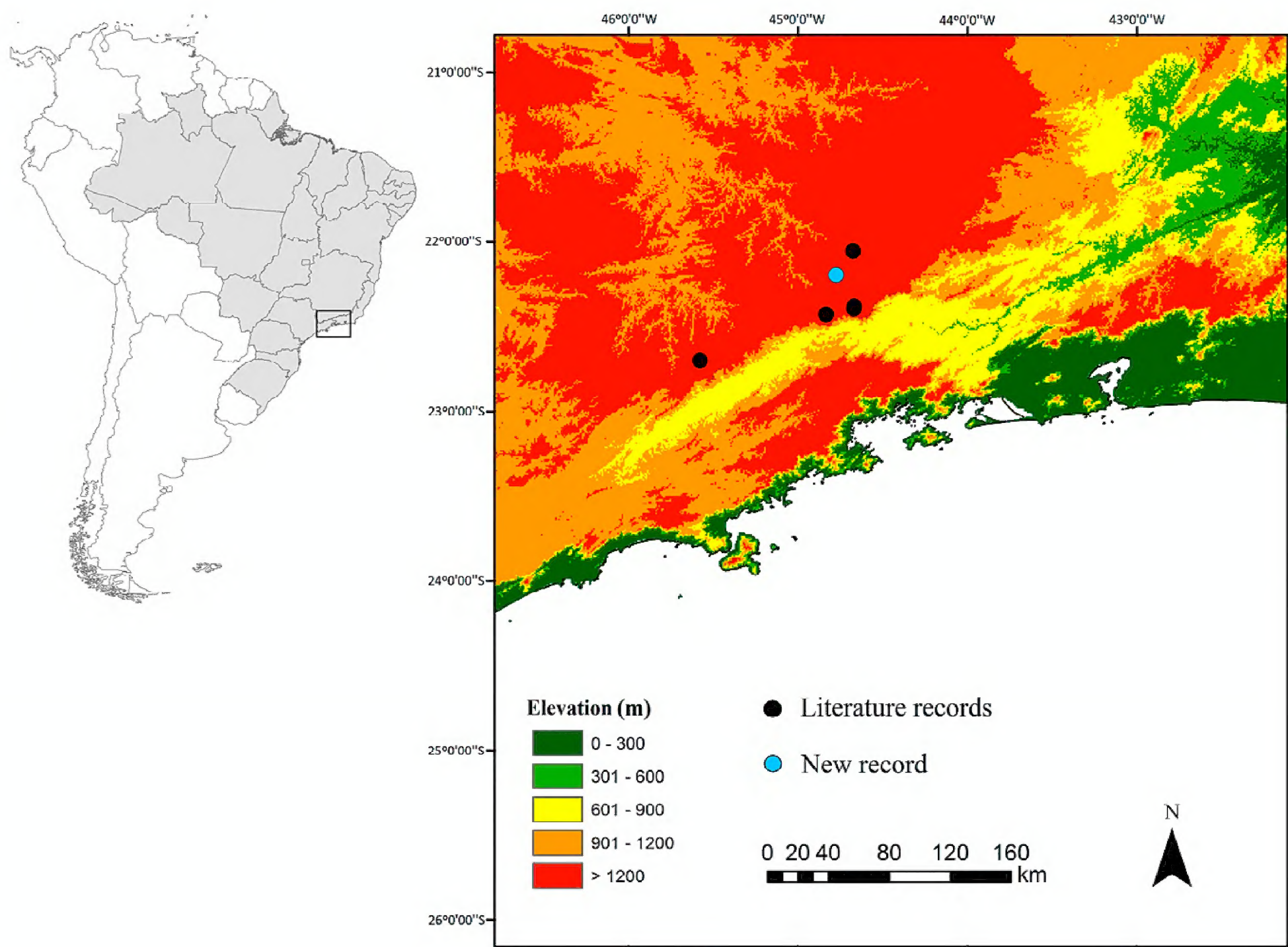


Figure 1. Distribution map for *Melanophryniscus moreirae* with the new record in Alagoa (blue circle), state of Minas Gerais, Brazil. Black circles represent the records cited in the literature (MARQUES et al. 2006, ZANK et al. 2014).



Figure 2. Specimen of *Melanophryniscus moreirae* collected at Serra do Papagaio (22°11'53.47" S, 044°46'00.35" W), municipality of Alagoa, state of Minas Gerais, Brazil.

al. 2006, WEBER et al. 2007).

This new record establishes the fifth known occurrence for *M. moreirae* and fills a gap, between Itamonte and Aiuruoca, of about 32 km in the distribution of the species. The newly reported occurrence is located 18 km southeast from the nearest previous record in Aiuruoca. According to ETEROVICK et al. (2005), in recent decades the population of *M. moreirae* may be declining, which has raised concern for the conservation of the species and is the reason for its Near Threatened status by SILVANO et al. (2004). However, MARQUES et al. (2006) and WEBER et al. (2006) revealed new occurrences for *M. moreirae*.

MARQUES et al. (2006) found dozens of individuals of *M. moreirae* in Itatiaia National Park, Itamonte, Minas Gerais, and proposed that this species is Data Deficient. A decade later (February 2016), we also observed many individuals in this park and can corroborate the observation by MARQUES et al. (2006) on the abundance and apparent healthy state of the population. In a recent national evaluation of the risk of extinction of the Brazilian fauna (MMA 2014), *M. moreirae* was not listed as Endangered, Near Threatened or Data Deficient and is not currently a species of conservation concern, and the new record helps to confirm this decision. We believe that additional inventories, particularly in areas where occurrence of *M. moreirae* is most probable (ZANK et al. 2014), can be useful to better understand the distribution and biology of populations of this species.

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LITERATURE CITED

- BOKERMANN, W.C.A. 1967. Observações sobre *Melanophryniscus moreirae* (Mir. Rib.) (Amphibia–Brachycephalidae). Anais da Academia Brasileira de Ciências 39(20): 301–306.
- BORNSCHEIN, M.R., C.R. FIRKOWSKI, D. BALDO, L.F. RIBEIRO, R. BELMONTE-LOPES, L. CORRÊA & M.R. PIE. 2015. Three new species of phytotelm-breeding *Melanophryniscus* from the Atlantic Rainforest of southern Brazil (Anura: Bufonidae). PLoS ONE 10: e0142791. <https://doi.org/10.1371/journal.pone.0142791>
- CARVAJALINO-FERNÁNDEZ, J.M., A.M. JECKEL & R.P. INDICATTI. 2013. *Melanophryniscus moreirae* (Amphibia, Anura, Bufonidae): dormancy and hibernacula use during cold season. Herpetologia Brasileira 2: 61–62.
- COCHRAN, D.M. 1955. Frogs of southeastern Brazil. Bulletin of the United States National Museum 206: 1–423.
- CRUZ, C.A.G. & U. CARAMASCHI. 2003. Taxonomic status of *Melanophryniscus stelzneri dorsalis* (Mertens, 1933) and *Melanophryniscus stelzneri fulvoguttatus* (Mertens, 1937) (Amphibia, Anura, Bufonidae). Boletim do Museu Nacional. Nova Série Zoologia 500: 1–11.
- ETEROVICK, P. C., A.C.O. CARNAVAL, D.M. BORGES-NOJOSA, D.L. SILVANO, M.V. SEGALLA & I. SAZIMA. 2005. Amphibian declines in Brazil: an overview. Biotropica 37: 166–179. <https://doi.org/10.1111/j.1744-7429.2005.00024.x>
- FROST, D.R. 2016. Amphibian species of the world: an online reference. Version 6.0 Accessed at <http://research.amnh.org/vz/herpetology/amphibia/>, June 2016.
- GALLARDO, J.M. 1961. La ubicación sistemática y distribución geográfica de Brachycephalidae Argentinos. 1ª Reunión de Trabajos y Comunicaciones de Ciencias Naturales y Geografía del Litoral Argentino, Universidad Nacional del Litoral 1: 205–212.
- GUIX, J.C., A. MONTORI, G.A. LLORENTE, M.A. CARRETERO & X. SANTOS. 1998. Natural history and conservation of bufonids in four Atlantic rainforest areas of southeastern Brazil. Herpetological Natural History 6: 1–12.
- HADDAD, C.F.B., L.F. TOLEDO, C.P.A. PRADO, D. LOEBMANN, J.L. GASPARINI & I. SAZIMA. Guia de anfíbios da Mata Atlântica: diversidade e biologia. São Paulo: Anolisbooks. 544 pp.
- KWET, A., R. MANEYRO, A. ZILLIKENS & D. MEBS. 2005. Advertisement calls of *Melanophryniscus dorsalis* (Mertens, 1933) and *M. montevidensis* (Philippi, 1902), two parapatric species from southern Brazil and Uruguay, with comments on morphological variation in the *Melanophryniscus stelzneri* group (Anura: Bufonidae). Salamandra 41: 3–20.
- MANEYRO, R., D.E. NAYA & D. BALDO. 2008. A new species of *Melanophryniscus* (Anura, Bufonidae) from Uruguay. Iheringia, Série Zoologia 98(2):189–192.
- MARQUES, R.M., P.F. COLAS-ROSAS, L.F. TOLEDO & C.F. HADDAD. 2006. Amphibia, Anura, Bufonidae, *Melanophryniscus moreirae*: distribution extension. Check List 2: 68–69. <https://doi.org/10.15560/2.1.68>
- MMA (MINISTÉRIO DO MEIO AMBIENTE). 2014. Fauna brasileira ameaçada de extinção. portaria nº 444, de 17 de dezembro de 2014. Accessed at <http://www.icmbio.gov.br/portal/>, 10 September 2015.
- OLSON, D.M., E. DINERSTEIN, E.D. WIKRAMANAYAKE, N.D. BURGESS, G.V.N. POWELL, E.C. UNDERWOOD, J. D'AMICO, I. ITOUA, H.E. STRAND, J.C. MORRISON, C.J. LOUCKS, T.F. ALLNUTT, T.H. RICKETTS, Y. KURA, J.F. LAMOREUX, W.W. WETTENGEL, P. HEDAO & K.R. KASSEM. 2001. Terrestrial ecoregions of the world: a new map of life on Earth. BioScience 51: 933. <http://doi.org/c635xt>
- PELOSO, P.L., J. FAIVOVICH, T. GRANT, J.L. GASPARINI & C.F. HADDAD. 2012. An extraordinary new species of *Melanophryniscus* (Anura, Bufonidae) from southeastern Brazil. American Museum Novitates 3762: 1–32. <https://doi.org/10.1206/3762.2>
- SILVANO, D., U. CARAMASCHI & M.T. RODRIGUES. 2004. *Melanophryniscus moreirae*. The IUCN Red List of threatened species 2004: e.T25954A9460487. <https://doi.org/10.2305/iucn.uk.2004.rlts.t25954a9460487.en>
- VAN SLUYS, M., & P. GUIDO-CASTRO. 2011. Influence of temperature and photoperiod on the activity of *Melanophryniscus moreirae* (Miranda-Ribeiro 1920) (Anura: Bufonidae) on the Itatiaia plateau, southeastern Brazil. South American Journal of Herpetology 6: 43–48. <https://doi.org/10.2994/057.006.0106>
- WEBER, L.N., L.S. PROCACI, R.O.L. SALLES, S.P. DA SILVA, A.L. CORRÊA & S.P. DE CARVALHO. 2007. Amphibia, Anura, Bufonidae, *Melanophryniscus moreirae*: distribution extension. Check List 3: 346–347. <https://doi.org/10.15560/3.4.346>
- ZANK, C., F.G. BECKER, M. ABADIE, D. BALDO, R. MANEYRO & M. BORGES-MARTINS. 2014. Climate change and the distribution of Neotropical red-bellied toads (*Melanophryniscus*, Anura, Amphibia): how to prioritize species and populations? PLoS ONE 9: e94625. <https://doi.org/10.1371/journal.pone.0094625>

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